

APPENDIX C

ADAPTIVE ENVIRONMENTAL MANAGEMENT PROCESS



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Draft Adaptive Environmental Management Planning Process for the Pinedale Anticline Project Area

Introduction

This document outlines the planning process for Adaptive Environmental Management (AEM) of the Pinedale Anticline Project Area (PAPA). This document describes the basic components of AEM and steps involved in its implementation.

The PAPA Draft EIS contains a detailed description of the speculative nature of exploration and development in the PAPA. Indeed, based on the limited exploration that has taken place to date, it is impossible to predict how future development will proceed. The extent and nature of gas reserves in the PAPA are unknown and are expected to remain so for several years. Some believe that development potential in the PAPA is enormous and that hundreds of wells may be necessary to adequately drain all the reserves. Others believe that development potential is much more modest and essentially limited to the crest of the anticline and perhaps a few small, isolated areas away from the crest. All agree that there is a great deal of uncertainty about future development. Because of this uncertainty, a number of assumptions were necessary to predict the impacts associated with future development. Those assumptions may or may not be correct.

Purpose and Need

There is at least equal (if not more) uncertainty regarding how the environment will react to future development in the PAPA. For instance, will a buffer of 1,000 feet around nesting ferruginous hawk nests prevent nest abandonment in all cases? Will best management practices be adequate to prevent water quality degradation in the New Fork River? Will deer and antelope respond to new development as predicted in the wildlife models? How can we provide answers to these questions? These questions are particularly relevant given our current ability to predict cumulative perturbations on the ecosystem. For instance, the big game animals occupying the PAPA do so year-round but many migrate into the area during the winter. Impacts occurring elsewhere on their range could affect the number of animals on the PAPA. The same applies to air quality where a number of cumulative sources affect Class I airsheds. Predictions regarding the severity of the impacts are complicated further by the fact that some of the development may occur on private and state lands where protective measures (such as seasonal restrictions to protect big game and raptor nests, no surface occupancy stipulations around wetlands, etc.) are not typically applied. What will be the cumulative impacts on the Sublette deer herd when seasonal restrictions are imposed on only that portion of their winter range that occurs on Federal lands and minerals? Will perturbations on private lands increase density on Federal lands resulting in deteriorating quality of habitat? Some very sensitive resources within the PAPA (such as wetlands and riparian areas) are located almost entirely on private and state lands where separate non-federal controls to protect the resources are applicable.

The uncertainties as to where and at what level development will proceed as well as uncertainties associated with the environmental sciences that were used to predict impacts suggest that the one-time determination of impacts that is included in the EIS may not be appropriate for this project. However, a carefully prepared and thoroughly evaluated AEM Plan and process may be suitable for dealing with these uncertainties. Such a plan/process would provide a mechanism for continuously modifying management practices in order to allow continued exploration and development while continuing to protect the environment.

CEQ regulations require appropriate application of continual monitoring and assessment. Section 102(2)(B) of NEPA calls for *"methods...which will insure that presently unquantified environmental amenities and values may be given appropriate consideration."* CEQ regulations (40 CFR 1505.2(c); 1505.3(c) and (d)) state *"a monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation"* and that agencies *"may provide for monitoring to assure that their decisions are carried out and should do so in important cases."* The lead agency must *"upon request, inform cooperating or commenting agencies on progress in carrying out mitigation measures which they have proposed and which were adopted by the agency making the decision."* And, *"upon request, make available to the public the results of relevant monitoring."*

Goals and Objectives

The goals and objectives of the AEM process are to develop resource monitoring plans for specified resources to, among other things:

- Determine the effects of PAPA development on these resources;
- Determine the effectiveness of the mitigation measures contained in the Record of Decision (ROD);
- Modify the mitigation measures as deemed appropriate to achieve the stated goal/objective;
- Assure that non-oil-and-gas related BLM decisions (such as grazing, recreation, etc.) regarding the PAPA are coordinated with gas-related development;
- Provide a rapid response to unnecessary/undue environmental change;
- Validate predictive models used in the EIS and revise the models/projections as necessary based on field observations and monitoring;
- Accurately monitor and predict cumulative impacts through BLM maintenance of a Geographic Information System (GIS) for the PAPA including all activities (natural gas, residential, agricultural, etc.) on Federal and non-Federal lands and how they are affecting resources;
- Allow for stakeholder participation in future decision making;
- Provide guidance for monitoring (surveys) upon which the need to initiate Section 7 consultation with the USFWS will be determined.

Resource Monitoring Plans and Objectives

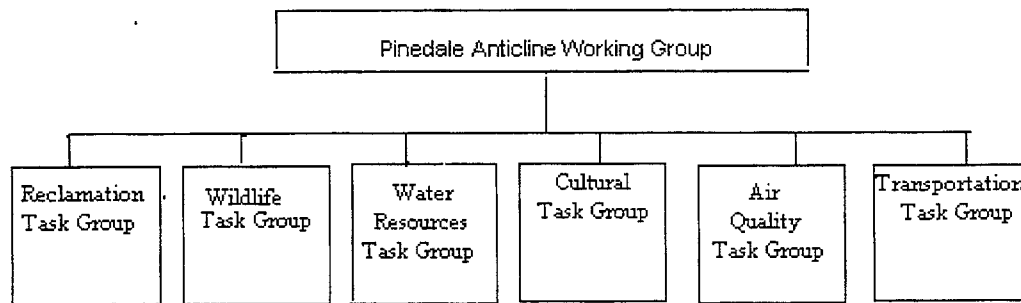
Monitoring Plans will be prepared for the following resources and activities. The determination of who will do the on-the-ground monitoring will be made by the Task Group assigned to prepare the monitoring plan.

- **Wildlife Resource**
 - ▶ Big Game - Mule deer, antelope
 - ① Monitor and document mule deer and antelope populations associated with the PAPA for changes, if any, in numbers, distribution, and reaction to oil/gas development.
 - ② Document changes, if any, in crucial winter habitat (Breaks and Mesa) and quality, and changes in animal numbers, distribution, and reaction.
 - ▶ Upland Game - Sage grouse
 - ① Monitor and document sage grouse population, breeding and nesting activity associated with the PAPA for changes, if any, in numbers, distribution, and reaction to oil/gas development.
 - ② Document changes, if any, in breeding and nesting population numbers, distribution, habitat quality, and reaction to oil and gas development.
 - ▶ Raptors - Ferruginous hawk, other raptors
 - ① Monitor and document raptor populations and their nesting activity and locations within the PAPA.
 - ② Document changes, if any, in nesting locations, active nest sites, and their reaction to oil/gas development.
 - ▶ T/E & Sensitive Species - Bald eagle, black-footed ferret, mountain plover
 - ① Complete clearance surveys and document results for these species within the PAPA.
 - ② For sightings or sign, initiate consultation with the USFWS and initiate intensive monitoring for the species occurrence and distribution.
- **Water Quality**
 - ▶ New Fork River
 - ① Complete a water quality survey and analysis of the New Fork River (above and below project activity) and monitor and document on an annual basis chemical changes, if any, in water quality and quarterly conduct ocular monitoring surveys for changes in color/sediment quality.
 - ▶ Livestock Water Wells
 - ① Complete a water quality survey and analysis of all water wells within one mile of a drilling and/or producing natural gas well.
 - ② Annually complete a survey and report on changes, if any, in the quality of well water.
- **Reclamation/Best Management Practices**
 - ▶ Surface disturbance revegetation
 - ① Annually monitor and report on disturbed site reclamation/revegetation and invasive species concerns.

- **Air Quality**
 - Nitrogen oxide emissions
 - ① Complete an annual monitoring report of actual on-the-ground calculated potential NO_x emissions (i.e., the level of NO_x emission from permitted, actually constructed/installed facilities based upon the permitted level of emissions per well location, compressor facility, etc.) for the Jonah II and Pinedale Anticline project areas.
 - ② Continue to cooperate in the implementation of existing visibility and atmospheric deposition impact monitoring programs. Evaluate need for additional monitoring.
- **Cultural Resources**
 - Discoveries
 - ① Complete an annual report on the context of the archeological and historic resources discovered during development.
- **Transportation**
 - Access roads and sales pipelines
 - ① Monitor construction to ensure design and use standards are met and maintained. Assess development patterns to determine most effective corridors for main transportation facilities.

AEM Planning Process Implementation Model

The BLM Pinedale Field Manager will implement the AEM process by establishing the *Pinedale Anticline Working Group (PAWG)* and *Task Groups (TGs)*. The PAWG will function as an oversight working group consisting of members from BLM, the cooperating agencies, operators, environmental community, and the public. The structure of the PAWG will be as follows:



AEM Membership. The membership of the PAWG may include representatives from the following federal, state and local agencies, public, and environmental community:

- Bureau of Land Management [Pinedale Field Office and personnel with special expertise from other BLM offices]
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- USDA Forest Service
- State of Wyoming agencies [Wyoming Game and Fish Department, Wyoming Department of Transportation, Wyoming Department of Environmental Quality - Air and Water Quality Divisions, State Historic Preservation Office, State Engineers Office, Wyoming Oil and Gas Conservation Commission, etc.]
- U.S. Environmental Protection Agency
- Sublette County government [particularly planning and zoning, road and bridge]
- Town of Pinedale
- Oil/Gas Operators
- Members of the public
- Environmental groups [Wyoming Outdoor Council, Greater Yellowstone Coalition, Wyoming Wildlife Federation, etc.]
- PAPA landowners and livestock operators
- University of Wyoming
- Other affected and interested parties

Work Group Functions. An AEM public meeting will be held in Pinedale within two months of the issuance of the Pinedale Anticline ROD to establish the *PAWG* and select membership. The primary function of the *PAWG* will be to:

- Oversee the development and implementation of monitoring plans for the PAPA natural gas exploration and development;
- Meet at least once a year or more often as needed;
- Keep written record of meetings and disseminate to members and interested public;
- Conduct an annual field inspection to review the implementation of construction and rehabilitation operations;
- Review status quo and any new information since last meeting (e.g., monitoring results of impact mitigation effectiveness);
- Synthesize monitoring plan activities/expectations for the coming year, based upon operator input and new information;
- Review recommendations from the *Task Groups* and submit a recommendation to BLM (e.g., management practices and monitoring needs for upcoming field season);
- Oversee implementation of monitoring.

Task Group Membership. The membership of the individual *Task Groups* will be selected during the first public meeting within two months of the issuance of the Pinedale Anticline ROD. A suggested membership for consideration is listed in Attachment I.

Task Group Functions. During the public meeting held in Pinedale within two months of the issuance of the Pinedale Anticline ROD, separate resource or activity *Task Groups* (*TGs*) will be established. The primary function of the *TGs* will be to complete the following:

- Prepare and oversee implementation of specified resource/activity monitoring plans;
- Keep written record of meetings and disseminate to members and interested public;
- For the second AEM meeting (February 2001), *TGs* will:
 - Prepare monitoring plan to include the following:
 - ① Implementation protocol including who in industry will fund and conduct monitoring;
 - ② Annual monitoring report requirements and meeting frequency;
 - ③ Resource concerns (e.g., based upon current conditions, drilling plans, etc.);
 - ④ To aid in the preparation of the monitoring plan and for evaluation of monitoring results, review, evaluate and summarize past/present data pertaining to the resource;
 - ⑤ Annual survey/inventory, monitoring, etc. that needs to be completed;
 - ⑥ Resource protection/mitigation measures for resource as identified in the ROD;
 - ⑦ Evaluation of mitigation measure(s) effectiveness;
 - ⑧ Results of monitoring and evaluation of the effect of project development on the resource;
- For subsequent meetings the *TGs* will:
 - Be responsible for overseeing the accomplishment of the following:
 - ① Implement monitoring plan as approved by BLM;
 - ② Review and evaluate monitoring data collected;
 - ③ Present and submit monitoring results annually to *PAWG* and BLM;
 - ④ Review and evaluate current monitoring plan;
 - ⑤ Modify monitoring plan and implement as approved by BLM;
 - ⑥ Recommend modifications to the development and monitoring plan to the *PAWG* and BLM;
 - ⑦ Recommend modification to mitigation as needed.

AEM Planning Process Leadership and Meeting Agenda

The BLM will implement and coordinate the AEM Planning Process. The leadership for the coordination of the AEM Process will be located in the BLM Pinedale Field Office. Meetings of the *PAWG* and *TGs* will be held at least annually and will be open to the public. The *PAWG* meetings will be facilitated by a qualified facilitator. *PAWG* meetings will be held in the evening to allow maximum public involvement. The meeting agenda will include the following:

Function of *PAWG* at First Meeting:

- Explain Purpose and Need for AEM Planning Process;
- Explain organizational structure and functional responsibilities of *PAWG* and *TGs*;
- Establish and select *PAWG* membership;

- Review draft Memorandum of Understanding;
- Establish and select *TG* memberships;
- Set date, time, and place for next *PAWG* meeting.

Function of *PAWG* at Subsequent Meetings:

- Review minutes from previous meeting;
- Reports presented from the *TGs* on monitoring results;
- Review recommendations from *TGs*;
- Review Operator Plans;
- Receive public input;
- Develop adaptive environmental management recommendations if necessary;
- Submit recommendations and monitoring results to BLM;
- BLM specify any new directives;
- Set date, time, and place for next *PAWG* meeting.

TG Leadership and Meeting Agenda

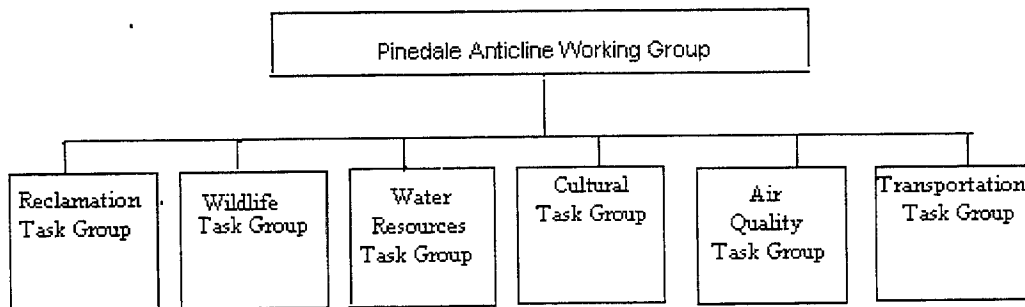
The individual *TG* leadership for the coordination among the membership and for the development, implementation, and reporting results of the monitoring plans will be as determined by the membership. Meetings of the *TGs* will be held as often as deemed necessary by the membership but at least annually and will be open to the public. The *TG* meetings will be facilitated by the membership-selected leader. *TG* meetings will be held during work-day hours. The agenda will be developed by the *TG* leader to address the necessary items as defined under the *TG Functions* above.

AEM Planning Process Funding

The BLM and the cooperating agencies lack the resources to adequately fund the implementation of monitoring programs specified. While the BLM and cooperating agencies need to be thoroughly involved in all aspects of monitoring, the majority of costs to implement these monitoring programs will have to be borne by the operators. The agencies will cooperate in the funding of monitoring to the extent that budget allocations permit.

ATTACHMENT I

TASK GROUP MEMBERSHIP



Suggested Membership - [Note: Members of the public will be added to all Task Groups]:

Reclamation Task Group

BLM, Operators, WGFD, County Weed/Pest, Livestock Operators, State of Wyoming, Sublette County

Wildlife Task Group

BLM, Operators, WGFD, U.S. Fish and Wildlife Service, Sublette County, Environmental Groups

Water Resources Task Group

BLM, Operators, State Engineer, Wyoming DEQ-Water Quality Division, U.S. Army Corps of Engineers, Livestock Operators, Sublette County

Cultural Task Group

BLM, Operators, State Historic Preservation Office

Air Quality Task Group

BLM, Operators, Wyoming DEQ-Air Quality Division, USDA Forest Service

Transportation Task Group

Already established